

CLAIMS

What is claimed is:

1 1. A network service provider system comprising:

2 a first coding unit that is communicatively coupled to a first endpoint via a circuit-

3 switching telephone network and communicatively coupled to a first packet-

4 switching network for transmission of voice information that is associated with

5 a voice call;

6 a first signaling unit that is communicatively coupled to the first coding unit, and to a

7 second signaling unit via a second packet-switching network for transmission

8 of signaling information that is associated with set-up of a voice call;

9 a second coding unit communicatively coupled to a second endpoint and to the second

10 signaling unit;

11 wherein the first signaling unit and the second signaling unit transmit, over the second

12 packet-switching network, signaling information that is associated with a

13 particular voice call; and

14 wherein the first coding unit and the second coding unit transmit, over the first

15 packet-switching network, voice information that is associated with the

16 particular voice call.

1 2. The system of claim 1, wherein the signaling information that is associated with set-

2 up of a voice call is received in accordance with a first protocol and the signaling

3 information that is transmitted over the second packet-switching network is in

4 accordance with a second protocol that is different than the first protocol.

1 3. The system of claim 2, wherein the voice information that is transmitted over the first
2 packet-switched network is in accordance with a third protocol that is different than
3 the second protocol.

1 4. The system of claim 1, wherein the circuit-switching network is a public-switched
2 telephone network (PSTN) and the first packet-switching network is the Internet.

1 5. The system of claim 1, wherein the first packet-switching network and the second
2 packet-switching network are the same physical network.

1 6. The system of claim 1, wherein the signaling information that is transmitted over the
2 second packet-switching network utilizes Internet Protocol (IP) as a transport layer
3 protocol.

1 7. A network service provider system comprising:
2 a first coding unit that is communicatively coupled to a first endpoint via a circuit-
3 switching telephone network and communicatively coupled to a first packet-
4 switching network;
5 a first signaling unit that is communicatively coupled to the first coding unit, and to a
6 second signaling unit via a second packet-switching network;
7 a second coding unit communicatively coupled to a second endpoint and to the second
8 signaling unit; and
9 one or more sequences of instructions stored in a first memory of the first signaling
10 unit and in a second memory in the second signaling unit, which, when
11 executed by the first signaling unit and the second signaling unit, respectively,

12 cause the first signaling unit and second signaling unit to process call signaling
13 information separately from voice information, by performing the steps of
14 in response to receiving, from the circuit-switching telephone network,
15 signaling data that is associated with establishment of a voice call,
16 obtaining a network address of a bearer channel port of the first coding
17 unit on the first packet-switching network;
18 determining that the second signaling unit should receive the voice call; and
19 sending a message to the second signaling unit, through the second packet-
20 switching network, the message including
21 a call identifier that uniquely identifies the voice call throughout the
22 network service provider system,
23 a first address identifier that identifies a network address of the first
24 signaling unit on the second packet-switching network,
25 a second address identifier that identifies a network address of the
26 second signaling unit on the second packet-switching network,
27 a connection descriptor that identifies the network address of the bearer
28 channel port of the first coding unit on the first packet-switching
29 network.

- 1 8. The system of claim 7, wherein the one or more sequences of instructions cause the
2 first signaling unit and second signaling unit to perform the steps of:
3 in response to receiving the message at the second signaling unit, determining
4 that the second coding unit and the second endpoint should receive the
5 voice call;

6 sending a message to the second coding unit for setting up a connection from
7 the second endpoint to the bearer channel port of the first coding unit;
8 and
9 establishing a bearer channel circuit, for transmission of voice information that
10 is associated with the voice call, on the first packet-switching network
11 between the first coding unit and the second coding unit.

1 9. The system of claim 8, wherein the one or more sequences of instructions cause the
2 first signaling unit and second signaling unit to perform the steps of:
3 sending a call setup message from the second signaling unit to the second
4 endpoint;
5 sending a first alert message from the second endpoint to the second signaling
6 unit to the first signaling unit via the second packet-switching network;
7 sending a modify connection request from the first signaling unit to the first
8 coding unit to set up an end-to-end bearer path between the first
9 endpoint and the second endpoint over the first packet-switching
10 network; and
11 sending a second alert message from the first signaling unit to the first
12 endpoint.

1 10. The system of claim 7, wherein the first packet-switching network and the second
2 packet-switching network are the same physical network.

1 11. The system of claim 7, wherein the second coding unit is communicatively coupled to
2 a second endpoint via a circuit-switching telephone network.

1 12. The system of claim 7, wherein the first coding unit is communicatively coupled to a
2 private branch exchange (PBX).

1 13. The system of claim 7, wherein the second coding unit is communicatively coupled to
2 a private branch exchange (PBX).

1 14. The system of claim 7,
2 wherein the signaling data that is associated with establishment of a voice call is
3 according to a first protocol; and
4 wherein the message sent to the second signaling unit through the second packet-
5 switching network is according to a second protocol that is different than the
6 first protocol.

1 15. A network service provider system comprising:
2 first coding means that is communicatively coupled to a first endpoint via a circuit-
3 switching telephone network and communicatively coupled to a first packet-
4 switching network for transmission of voice information that is associated with
5 a voice call;
6 first signaling means that is communicatively coupled to the first coding means, and
7 to second signaling means via a second packet-switching network for
8 transmission of signaling information that is associated with set-up of a voice
9 call;
10 second coding means communicatively coupled to a second endpoint and to the
11 second signaling means;

12 wherein the first signaling means and the second signaling means transmit, over the
13 second packet-switching network, signaling information that is associated with
14 a particular voice call; and

15 wherein the first coding means and the second coding means transmit, over the first
16 packet-switching network, voice information that is associated with the
17 particular voice call.

1 16. A network service provider system comprising:

2 first coding means that is communicatively coupled to a first endpoint via a circuit-
3 switching telephone network and communicatively coupled to a first packet-
4 switching network;

5 first signaling means that is communicatively coupled to the first coding means, and
6 to second signaling means via a second packet-switching network;

7 second coding means that is communicatively coupled to a second endpoint and to the
8 second signaling means; and

9 means for causing the first signaling means and the second signaling means to process

10 call signaling information separately from voice information, comprising:

11 means for obtaining a network address of a bearer channel port of the first

12 coding means on the first packet-switching network in response to

13 receiving, from the circuit-switching telephone network, signaling data

14 that is associated with establishment of a voice call;

15 means for determining that the second signaling means should receive the

16 voice call; and

17 means for sending a message to the second signaling means, through the
18 second packet-switching network, wherein the message includes
19 means for uniquely identifying the voice call throughout the network
20 service provider system,
21 means for identifying a network address of the first signaling means on
22 the second packet-switching network,
23 means for identifying a network address of the second signaling means
24 on the second packet-switching network,
25 means for identifying the network address of the bearer channel port of
26 the first coding means on the first packet-switching network.

- 27 17. The system of claim 16, wherein the means for causing the first signaling means and
28 second signaling means to process signaling information separately from the voice
29 information comprise:
30 means for determining, in response to receiving the message at the second signaling
31 means, that the second coding means and the second endpoint should receive
32 the voice call;
33 means for sending a message to the second coding means for setting up a connection
34 from the second endpoint to the bearer channel port of the first coding means;
35 and
36 means for establishing a bearer channel circuit, for transmission of voice information
37 that is associated with the voice call, on the first packet-switching network
38 between the first coding means and the second coding means.

1 18. The system of claim 17, wherein the means for causing the first signaling means and
2 second signaling means to process signaling information separately from the voice
3 information comprise:
4 means for sending a call setup message from the second signaling means to the
5 second endpoint;
6 means for sending a first alert message from the second endpoint to the second
7 signaling means to the first signaling means via the second packet-switching
8 network;
9 means for sending a modify connection request from the first signaling means to the
10 first coding means to set up an end-to-end bearer path between the first
11 endpoint and the second endpoint over the first packet-switching network; and
12 means for sending a second alert message from the first signaling means to the first
13 endpoint.

1 19. The system of claim 16,
2 wherein the signaling data that is associated with establishment of a voice call is
3 according to a first protocol; and
4 wherein the message sent to the second signaling means through the second packet-
5 switching network is according to a second protocol that is different than the
6 first protocol.

1 20. A computer-readable medium carrying one or more sequences of instructions for
2 processing voice call signaling information separately from voice information, which

3 instructions, when executed by one or more processors, cause the one or more processors
4 to carry out the steps of:

5 in response to receiving, from a circuit-switching telephone network, signaling data

6 that is associated with establishment of a voice call, obtaining a network

7 address of a bearer channel port of a first coding unit on a first packet-

8 switching network;

9 determining that a second signaling unit should receive the voice call; and

10 sending a message to the second signaling unit, through a second packet-switching

11 network, the message including

12 a call identifier that uniquely identifies the voice call throughout a network

13 service provider system,

14 a first address identifier that identifies a network address of a first signaling

15 unit on the second packet-switching network,

16 a second address identifier that identifies a network address of the second

17 signaling unit on the second packet-switching network,

18 a connection descriptor that identifies the network address of the bearer

19 channel port of the first coding unit on the first packet-switching

20 network.

- 1 21. The computer-readable medium of claim 20, wherein the one or more sequences of
2 instructions cause the one or more processors to carry out the steps of:
3 in response to receiving the message at the second signaling unit, determining that a
4 second coding unit and an associated destination endpoint should receive the
5 voice call;

6 sending a message to the second coding unit for setting up a connection from the
7 destination endpoint to the bearer channel port of the first coding unit; and
8 establishing a bearer channel circuit, for transmission of voice information that is
9 associated with the voice call, on the first packet-switching network between
10 the first coding unit and the second coding unit.

1 22. The computer-readable medium of claim 21, wherein the one or more sequences of
2 instructions cause the one or more processors to carry out the steps of:
3 sending a call setup message from the second signaling unit to the destination
4 endpoint;
5 sending a first alert message from the destination endpoint to the second signaling
6 unit to the first signaling unit via the second packet-switching network;
7 sending a modify connection request from the first signaling unit to the first coding
8 unit to set up an end-to-end bearer path between a source endpoint and the
9 destination endpoint over the first packet-switching network; and
10 sending a second alert message from the first signaling unit to the source endpoint.